

WSC G.F.R.  
2536 ✓  
4006

3400 Forest Pest Management

August 30, 1982

Functional Assistance Trip and Two-Year Progress Report  
on the White River RD, Mt. Baker-Snoqualmie NF

Forest Supervisor, Mt. Baker-Snoqualmie NF

In August 1978, eight  $\frac{1}{4}$ -acre plots were established on the White River Ranger District to monitor the effects of precommercial thinning in 10- to 20-year-old Douglas-fir plantations affected by *Armillaria* root rot. The eight plots are located in two units (T. 18 N., R. 10 E., sec. 13).

Four years following installation, four of 406 (1.0%) crop trees in thinned plots were killed (3 by *Armillaria*, 1 by *Fomes annosus*). In plots left unthinned, ten of 416 (2.4%) crop trees were killed, all by *Armillaria*. It is premature to draw any conclusions at this time. In the interim, progress reports will be prepared by FPM at 2-year intervals.

Three other Douglas-fir plantations were examined on August 24 and 25, 1982 by Gregory M. Filip, Plant Pathologist from the Forest Pest Management Staff, Regional Office. He was accompanied by Barry Olsen from the District Office.

The first unit examined was the Midnight Creek Unit. Scattered mortality due to laminated root rot, caused by the fungus, *Phellinus weirii*, was found in precommercial size Douglas-fir. Portions of the plantation were infected severely. As discussed with Barry, severely infected areas including a 50-foot buffer strip should not be thinned. It is nearly impossible to determine which trees will survive in infected areas, so selection of crop would be futile. These stands probably can be grown to harvestable small poles before most of the trees die. In areas where dead and dying infected trees are widely scattered throughout the plantation (say 200 feet or more between affected trees), thin lighter than normal, possibly at an 8' x 8' spacing rather than a 10' x 10' spacing, to anticipate additional mortality. Also, favor *Phellinus*-resistant species such as hemlock, cedar, and rust-free white pine.

Two other plantations they visited were Meadow Creek Unit #1 and some of the Buck Creek Units. Both units were infected and experiencing mortality due to *Armillaria* root rot, caused by the fungus, *Armillaria mellea*. Much of Meadow Creek was sparsely stocked with Douglas-fir and noble fir, and scattered mortality was occurring in both species. Buck Creek had better stocking but some areas had several groups of trees killed by *Armillaria* root rot.

*Armillaria* root rot is a chronic problem in many westside Douglas-fir plantations. Unlike laminated root rot, *Armillaria* root rot is most damaging at ages 10 to 25 years. After this period, trees become more resistant to *Armillaria* infection, and damage becomes less frequent as the stand matures. Also, trees that are weakened or stressed are more likely to die as a result of infection by *Armillaria* unlike laminated root rot which kills trees of all

vigor and age classes. Although the data are still rather inconclusive, we feel that thinning should increase residual tree vigor and reduce mortality caused by *Armillaria*.

Unless portions of plantations are understocked and have several adjacent groups of *Armillaria*-killed trees, we recommend that the stands be thinned as usual or at a slightly closer spacing in anticipation of some additional mortality. We feel it is better to continue thinning operations in most *Armillaria*-infected stands than in *Phellinus*-infected stands, since *Armillaria*-caused mortality is closely related to tree vigor and age.

We further recommend that plantations be evaluated to determine (1) species of root pathogens present and (2) relative severity and distribution of the root diseases since future silvicultural operations are dependent on these factors. FPM pathologists could assist the District in this survey in a 2- to 3-week period next July or August as suggested by Barry. The survey could also serve as a training session for District crews to learn to distinguish between the various root diseases and learn how to assess the damage caused by them. As suggested by Barry, it may be possible to include crews from other Districts on the Forest to benefit from the training.

In order to facilitate the survey, we suggest that only the following types of plantations be intensively surveyed:

1. Plantations where disease levels and distribution are not completely known. Totally healthy plantations could be avoided.
2. Plantations primarily composed of Douglas-fir. Higher elevation plantations with primarily noble or pacific silver fir could be avoided since these do not appear to be as severely affected.
3. Plantations that are unthinned. Disease information can be used to determine if precommercial thinning should be avoided, modified, delayed, or conducted as normal. Some thinned plantations could be surveyed, especially if mortality is evident in crop trees.
4. Plantations 10- to 25-years-old. Younger stands do not show significant mortality. Most older stands have already been thinned, so the information gathered is not as important for thinned units as it is for unthinned units.

Barry has offered to do the initial screening of the plantations and provide 4-inch-to-the-mile maps of the selected plantations.

If further assistance is needed, please contact FPM.

Randall F. Perkin

PAUL E. BUFFAM, Director  
Forest Pest Management

cc: Barry Olsen, White River RD  
Lee Boeckstiegel, SO , w/encl.

GMFilip:cc